



Prospective Restoration / Restoration Up Front

Workshop Summary

September 6-7, 2006

Chevron Campus

San Ramon, California

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Acknowledgements

A note of gratitude is extended to the following individuals and organizations:

Mr. Mike Ammann & Chevron – provided meeting rooms, logistical support, breakfast, lunch and breaks for participants in the workshop. The contribution from Chevron reduced significantly the out of pocket expenses typically associated with workshops of this type.

National Fish & Wildlife Foundation – provided the support that allowed contributed funds to be applied to offset the travel and lodging costs of a number of invited participants. Thanks to Mr. Tom Kelsch and Ms. Lynn Dwyer.

Ms. Jenny Liu, Ms. Amanda DeSantis and Dr. Ralph Stahl – these three individuals were responsible for assembling much of the content, logistics, and agenda for the workshop and were steadfast in making sure the workshop ran smoothly. These individuals work for the DuPont Company.

There are a number of additional individuals, especially Mr. Ron Gouguet, NOAA, who were crucial to the plenary presentations, and facilitation of the discussion among members of each workgroup. Without their time and effort, the workshop would not have made the significant progress represented in this document. These individuals are listed later in this document.

Contributors to the workshop, either in the form of financial support or through travel and lodging support for their representatives, are listed at the end of this document.

Background

There are significant restoration needs and challenges for restoration implementation in aquatic and terrestrial areas across the United States. There is less open space suitable for restoration or enhancements, slowing restoration actions and ultimately increasing their costs. Additionally, timelines for developing and implementing restoration can be substantial and significantly delay the restoration of impacted resources. For more than 2 years, state and federal Natural Resource Trustees, industry, and conservation organizations have been collaborating to improve restoration implementation while negotiating natural resource damage claims. These latter discussions have led to the concept of Prospective Restoration Planning, Restoration Up Front, or Restoration Banking.

On September 6-7, 2006 a workshop was held to further the discussion and evaluate the concept of Prospective Environmental Restoration / Restoration Up Front (hereinafter referred to as “RUF”). Approximately 70 individuals participated, representing state and federal government, business and industry, Native American tribes, and non-governmental environmental or conservation groups. The participants were divided into three main workgroups: 1. Banking and Trading Mechanisms; 2. Project Selection, Prioritization, and Geographical Boundaries; and, 3. Economics. These workgroups were given 6-10 questions each to address over the course of the 2 days and were asked to provide a summary of their deliberations and, where possible, document main areas of consensus.

The following compiles the main points of deliberation and consensus for each of the three workgroups. It is hoped that these points, along with the workshop and increased personal networks, will further the concept nationally and stimulate “on-the-ground” projects where the concept can be implemented, tested, and refined.

Concept

An entity undertakes restoration (i.e., preservation, enhancement or creation) and receives “credit” for that restoration in a currency (e.g., discounted service acre years) that can be applied to an existing or future liability, or the “credits” may be sold or traded to another entity or even potentially leveraged with other funding mechanisms. The credits are “durable” (across time, but not necessarily equally transferable across sites) so long as the habitat or resource that

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generates the service flows remains in the same or similar condition as when the credits were first assigned.

The restoration may be undertaken prospectively, before an existing or potential liability is identified or quantified. The restoration is not intended to be in lieu of an entity undertaking actions necessary to mitigate a spill or clean up contamination. It is not a “license to pollute”. The restoration is most likely to be applied against interim natural resource service losses, but may also, in some cases, be used as part of a primary restoration action.

Under the concept, the federal and state natural resource trustees would work in concert with government and non-governmental partners. The trustees would identify and estimate costs for particular projects, ensure compliance with the National Environmental Policy Act (NEPA), and determine the credits that could accrue from a particular restoration. When the “credits” are applied to a liability, the trustees would cooperatively determine the final value of the credits and their applicability to a specific situation.

Example

A hypothetical conceptual example to illustrate the RUF concept follows. Company A needs to undertake 20 ac of restoration in a tidal wetland to offset a quantified liability (natural resource damage or other). However, the most viable project in the area is approximately 50 ac in size. The company decides to restore the 50 ac and then applies 20 ac against the original liability. The company now has 30 ac of “credit” that can be held, traded or sold, and used at a later date.

Workshop Goal

Based on the experiences gained from the restoration projects undertaken that utilize the concept of RUF, and the learning from other environmental trading models, the overall goal of this Workshop is to develop consensus approaches to address specific questions regarding how the concept of RUF will be applied to pilot projects in the near term. Given the diversity of attendees, the novelty of the concept, and that only one or two pilot efforts have begun, it was clear that consensus on all issues would not be possible. However, even if consensus is not achievable at this early juncture, the Workshop products will contribute to the development of a

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framework for a RUF program in the United States. With time and effort, the concept will mature and, hopefully, become a stimulus for increasing restoration around the country.

Workshop Objectives

- Identify and document approaches, consensus points, and areas in need of resolution for RUF.
- Evaluate and communicate methods and approaches from other environmental trading models that may be applicable to RUF.
- Develop and document responses to Workshop Questions and identify specific data gaps, incorporating lessons learned from prospective restoration projects currently underway.
- Seek to achieve consensus on how the concept of RUF will be applied to prospective restoration projects in the near term. In particular, discuss geographic preferences, applicability across habitat types, and methods for calculating credits for prospective restoration projects.
- Summarize the proceedings of the Workshop into a 20-30 page report, and provide to participants on CD or online through various websites. If there is sufficient interest and commitment, the proceedings may result in a manuscript suitable for publication in journals such as *Restoration Ecology* (Society of Ecological Restoration) or *Integrated Environmental Assessment and Management* (Society of Environmental Toxicology and Chemistry). The decision regarding publication will be made by the Steering Committee after consultation with the participants.

The following sections summarize the main points of deliberation and consensus of the three workgroups. For each workgroup, the facilitators and participants are listed, followed by the questions addressed, the workgroup's main consensus points, the responses to questions, and the next steps recommended by the workgroup. The overall consensus points and next steps for the workshop that came out of plenary discussions conclude the workshop proceedings.

Workgroup 1: Environmental Banking and Trading Mechanisms

Facilitators: *Jessica Fox, EPRI Solutions; Jenny Guiling, World Resources Institute*

Participants: Michael Ammann (Chevron), Kit Armstrong (Chevron), Neil Brody (LECG), Kathy Dadey (USACE), Richard DeSanti (Exxon Mobil), Kelly Duran (Chevron), Ray Givens (Yakama Nation), Greg Green (Ducks Unlimited), Eric Holst (Environmental Defense), Lucinda Jackson (Chevron), Rebecca Kramer (NFWF), Jenny Liu (DuPont), Jean Martin (BP), Chuck McKinley (USDOJ), Ann Neville (Kennecott Utah Copper), Cara Roderick (CA OSPR), Richard Seiler (TX CEQ), Bob Taylor (NOAA), Roy Thun (Atlantic Richfield), Todd Williams (Entrix), Katherine Verrue-Slater (CA OSPR), Julie Yamamoto (CA OSPR)

Questions Addressed:

- 1) What are the lessons learned from the existing environmental trading / banking models (e.g., conservation banking, wetlands mitigation banking, water quality trading, emissions trading) and the prospective restoration planning activities undertaken to date?
- 2) What are the existing mechanisms that companies can use to hold, apply, sell or trade environmental credits (e.g., existing mitigation bank in California)?
- 3) What are the different programs under which prospective restoration planning credits may be applied (e.g., NRDA, CWA Section 404, various permitting programs), and what are the impediments associated with each program? Is it feasible for more than one program to utilize credits from the same restoration “bank”?
- 4) What are the benefits and drawbacks of conducting restoration activities prospectively? Possible topics for discussion include benefits of doing restoration as soon as possible (e.g., before land is sold) and risks of not having predetermined liabilities to offset.
- 5) What are the existing and/or proposed mechanisms for a formal prospective restoration agreement between agencies and industry parties as well as between industry parties? How can it be ensured that the credits are durable? Legal perspective would be helpful.
- 6) What mechanisms can be used to ensure long-term management of ecological service flows?
- 7) Are there any constraints or barriers to prospective restoration planning that have not been identified in this workshop outline?
- 8) Describe three to five case studies related to this Workgroup topic that vary by the type of environmental trading / banking model and geographic location.

Summary:

The following reflects points of general consensus reached by Workgroup 1 as a result of discussions over the 2-day workshop.

Workgroup 1 Definition of RUF:

The first discussion point for Workgroup 1 was to agree upon a working definition of RUF. Restoration Up Front was defined by the Workgroup as restoration that is undertaken to satisfy natural resource damage (NRD) claim(s) under three possible scenarios:

Scenario 1: before an impact has occurred, subject to public acceptance and nexus to future resource injuries (for example, restoration may be undertaken on corporate property independent of an NRD claim);

Scenario 2: after an impact has occurred, when the liability is generally known but has not yet been fully quantified (for example, a company may anticipate an NRD claim and wish to conduct restoration prior to the damage assessment); or

Scenario 3: after a liability is fully quantified with one responsible party (for example, excess credits may be generated as a result of a restoration project undertaken by one or more responsible parties as part of a settlement / these credits could be sold to other responsible parties).

In the interest of moving the concept forward, it was agreed to initially constrain RUF to known / existing liabilities, i.e., Scenarios 2 and 3. The Workgroup bounded the time period for RUF between when an NRD liability is generally known (but not necessarily assessed or quantified) and when legal liability is settled.

There was recognition that the definition of RUF could be expanded in the future beyond the purpose of settling NRD claims, and that RUF concepts (and “credits”) could potentially apply to other environmental trading programs. However, narrower definitions were used for the purposes of the workshop discussions in the interest of moving the dialogue forward.

Workgroup 1 Consensus Points:

- The trustees are willing to discuss RUF (i.e., Scenarios 2 and 3 above) on a site-specific basis.
- The risks associated with RUF are worth taking for both trustees and companies.
- A “one-size-fits-all” approach is not likely to work for RUF.
- “Boundaries” or constraints for implementation should be established for the RUF process initially and expanded in incremental steps.
- RUF credits begin to accrue as soon as ecological service flows begin to accrue.

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- There must be a nexus between the RUF and the injured resources for trustee acceptance.
- RUF credits are transferable between entities so long as there is a nexus to the injury.
- Formal agreements are needed to reduce uncertainty.
- Meaningful public involvement is necessary.
- All parties have a common goal to restore more land, sooner rather than later, and recognize that companies require a business incentive to do so.

Workgroup 1 Responses to Questions:

Question 1: What are the lessons learned from the existing environmental trading / banking models (e.g., conservation banking, wetlands mitigation banking, water quality trading, emissions trading) and the prospective restoration planning activities undertaken to date?

- Meaningful public involvement is necessary. The public notice process for other trading / banking programs may not be adequate for NRDA (i.e., need to include a greater segment of the population).
- Monitoring and third party verification of restoration success are important. Define goals and objectives and ensure that there will be adequate monitoring / maintenance funds up front.
- Engage agencies and stakeholders up front.
- Need a stable, common currency.
- Need a well-defined service area / geographic extent of the market.
- Need a means to identify parties with known and recognized liabilities and parties with known and recognized credits (i.e., buyers and sellers).
- Summary matrix of similarities and differences across programs would be helpful.
- RUF initially contemplates a credits trading scheme rather than a true environmental market. There are significant differences between RUF and other environmental markets, which are regulatory driven, anticipatory (prior to impact) and/or investment / profit-making in nature.

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- Lessons from other environmental markets are likely to be most applicable to the up front establishment of the RUF process (e.g., agreements, tools, long-term management), rather than credits trading.

Question 2: What are the existing mechanisms that companies can use to hold, apply, sell or trade environmental credits (e.g., existing mitigation banks in California)?

- Existing tools are available from other trading programs and can be modified for RUF.
- On-line database accessible from a website would be ideal. The database could combine the marketplace for buying and selling credits with the ability to search for and identify restoration projects.
- Credits should be available for purchase at any point during a restoration project, until project is completed or credits are sold out.
- Third party / NGO should run the database with trustee oversight.
- On-line databases that exist or are in development for other trading / banking programs include: NutrientNet.org, Speciesbanking.com (in development; 2007 launch anticipated), Rivits.com (in development).

Question 3: What are the different programs under which prospective restoration planning credits may be applied (e.g., NRDA, CWA Section 404, various permitting programs), and what are the impediments associated with each program? Is it feasible for more than one program to utilize credits from the same restoration “bank”?

- All programs are potentially eligible to use RUF credits. It is theoretically and legally possible, but not yet feasible in practice.
- Accounting challenge to ensure no “double dipping” (i.e., the same credit being used under two programs).
- Credit stacking has been considered in NRDA. There is a potential for credit stacking in RUF, depending on individual program acceptance. Highest and best use analysis can be used to find opportunities for corporate property.
- A single property (but not the same credit within that property) can be used for multiple purposes if geographic or ecological service distinctions are drawn (i.e., the accounting is clear), there is a common currency and ecological nexus, and there is public acceptance.

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- In other trading programs (conservation banking, mitigation banking, water quality trading), agencies play a role in the calculation of credits. Agencies define the number and types of credits available, but the financial cost of the credits for sale is determined between the buyer and seller.

Question 4: What are the benefits and drawbacks of conducting restoration activities prospectively? Possible topics for discussion include benefits of doing restoration as soon as possible (e.g., before land is sold) and risks of not having predetermined liabilities to offset.

Benefits:

- Efficiencies: decreased transaction costs, administrative convenience, streamlined settlement.
- Restoration today instead of tomorrow. Ecological services begin sooner. There is broad recognition of the limited restoration opportunities and increasing lag times for implementation, and increasing costs of restoration / conservation in many areas of the country.
- Restoration in a deliberate, planned fashion rather than ad hoc and piecemeal.
- Encourages companies to “do the right thing.”
- Tax incentives for companies. Donation of property associated with excess restoration / conservation work (beyond that needed for settlement) for tax credits.
- Increased certainty of project success.

Drawbacks:

- The biggest drawback for responsible parties and trustees is the risk. For example, if an entity undertakes RUF and the trustees do not accept the credits for an NRD liability because there is no nexus to the injury. All parties must be willing to share the risks.
- Public perception that industry and trustees made a “backroom” deal. This is not unique to RUF.
- It may be difficult to find a willing NGO or third party to accept a property for long-term management. This is also not unique to RUF.

Question 5: What are the existing and/or proposed mechanisms for a formal prospective restoration agreement between agencies and industry parties as well as between industry parties? How can it be ensured that the credits are durable? Legal perspective would be helpful.

- Existing legal mechanisms can be used to establish RUF agreements.
- RUF agreements will take three forms and will likely be determined on a case-by-case basis: 1) agreement between companies; 2) agreement between trustees and the responsible party undertaking the RUF project; and 3) agreement between trustees and the responsible party with a liability who purchases credits.
- There may be a U.S. Department of Justice “hurdle” to overcome regarding enforcement and accountability.

Question 6: What mechanisms can be used to ensure long-term management of ecological service flows?

- A Memorandum of Understanding can be used to specify monitoring and verification requirements, restoration project goals and objectives, and the definition of project success.
- Both compliance monitoring and performance monitoring are necessary to satisfy legal and scientific objectives, respectively.
- Conservation easements can be used to ensure that conditions under an agreement are not violated.
- The establishment and cost of an endowment to fund long-term management should be considered up front in the cost of credits.
- Third party verification and/or enforcement may be helpful and is used in other environmental trading models.
- Financial assurances and performance bonds could be considered.
- The Center for Natural Lands Management (<http://www.cnlm.org>) is a reference for long-term stewardship of mitigation and conservation lands. The Center has developed a Property Assessment Record (PAR) to estimate the dollar amount per acre needed for long-term stewardship.

Question 7: Are there any constraints or barriers to prospective restoration planning that have not been identified in this workshop outline?

- Acceptance by public and affected constituents (e.g., U.S. Department of Justice).
- Funding for trustee time and resources.
- Suitability of property for NRDA.
- Availability of land and money.
- Acceptability of preservation vs. restoration for RUF. Possible solutions include demonstration of a threat of destruction / real potential for loss of use, and the use of ratios (e.g., X acres preserved land equals Y acres restored land).
- RUF may not apply if there was a significant loss to human use, rather than ecological services. However, values for recreation could potentially be calculated.
- Challenge of defining all of the natural resource service flows and human use values from a property.

Question 8: Describe three to five case studies related to this Workgroup topic that vary by the type of environmental trading / banking model and geographic location.

The workgroup discussed two restoration projects where RUF concepts were / are currently being applied: Star Lake Lodge, Texas and Commencement Bay / Hylebos Waterway, Washington. The lessons learned from these case studies include the following:

- Establish practical boundaries for application of the RUF concept to a project up front, and stick to them throughout the project.
- The projects to date have resulted in a relatively expensive, labor intensive, up front trustee effort. However, efficiencies and time / cost savings are anticipated once RUF concepts are more established.
- Benefits of RUF include the ability to aggregate small NRD liabilities and bring people to the table who otherwise would not be there, and the completion of a larger restoration project.
- Define the service area and market up front.
- Identify / compile a list of acceptable restoration projects up front.
- Obtain affected party buy-in ahead of time to the extent possible.
- Responsible parties with generally known liability can participate.

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- The RUF “bank” closes after the restoration project is completed.
- RUF gets restoration done much sooner – the environment wins.

Workgroup 1 Recommended Next Steps:

- Develop a summary matrix of similarities and differences across existing environmental trading programs.
- Compile a list of references from other environmental markets / trading programs. Focus on tools most likely to be applicable to RUF, such as web sites, databases, agreements, and long-term management mechanisms.

Workgroup 2: Ecological Service Area Boundaries and Restoration Project Selection

Facilitators: *Ron Gouguet, NOAA; Lynn Dwyer, National Fish & Wildlife Foundation*

Participants: Greg Baker (NOAA), Bruce Bayne (URS Corporation), Cheryl Belcher (NCCN), Dan Blankenship (CA OSPR), Steve Brown (Rohm and Haas), Joe Ciolek (Agricultural Trust of Contra Costa County), Amanda DeSantis (DuPont), Dorina Frizzera (NJDEP), Steve Glomb (USDOJ), Joe Hankins (The Conservation Fund), Mark Kamilow (Honeywell), Danielle Kreeger (PDE), Sherry Krest (USFWS), Jim McKenna (Port of Portland), Paul Michel (USEPA), Laura Napoli (Exxon Mobil), Kevin Roukey (USACE), Heather Tallis (The Nature Conservancy), Claire Thorp (NFWF)

Questions Addressed:

- 1) On what scale should prospective restoration planning occur (e.g., regional / watershed scale)? What are appropriate service area boundaries?
- 2) To what extent must the impact to which credits may be applied be known at the time of restoration, and factored into project selection?
- 3) What are existing mechanisms that land trust and other organizations have for ecosystem planning for acquisition and restoration projects? Are there existing inventories of potential restoration projects? How can these be applied to prospective restoration planning and accessed by interested parties?
- 4) How should restoration projects be identified, prioritized and selected? What criteria should be used? What entities should be involved in project selection?
- 5) How should public acceptance of the project be factored into the selection decision?
- 6) How should interstate / federal consistency be addressed (e.g., federal consistency under Coastal Zone Management)?
- 7) What are appropriate performance measures for restoration projects?

Summary:

The following consensus points were developed by Workgroup 2 as a result of discussions over the 2-day workshop.

Workgroup 2 Consensus Points:

- Regional restoration plans and/or strategies are needed.

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- The NGO community should be engaged early in the restoration process; may be able to utilize NGO credibility and public connection to assist with outreach and public education.
- There are number of factors that are pressing the need for identifying restoration early: resource time and funding are decreasing, number of viable properties is decreasing, property prices are increasing, and development pressures are increasing.
- Need a sense of urgency to get restoration on the ground early (“RUF” now or “RUFfer” later).
- Do not miss the opportunity to leverage the private sector willingness to provide restoration projects.
- Possibly develop agency policy / guidance and proceed with on-the-ground projects in parallel to determine if the concept works for an area and to garner successes and lessons learned in the process.
- Maps or areas of ecological service flows are needed, but caution may be needed if mapping private lands. This may be overcome by projects at a functional / watershed / broad-scale level.
- Take a watershed approach and determine a nexus (e.g., migratory species, flyways, etc.) for identifying possible restoration opportunities.
- Stakeholder and public involvement are key, and engagement should occur at an appropriate time.
- Integrate Adaptive Management into performance measures.
- Appropriate Performance Measures / Indicators should be determined on a case-by-case basis.
- Unify the various restoration lists developed by multiple entities for the same watershed.
- Need to establish a common language for RUF among parties involved.
- May need to establish a common currency; one example can be ecological service flows.
- Need to identify existing tools and catalog valuation approaches (e.g., HEA and REA).
- Need flexibility to adapt to local and regional needs; developing a decision “tree” or model may be useful.
- Need a net gain.

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- Recognize there are roadblocks that will likely be encountered when discussing and implementing the concept. Focus on “how,” rather than “why not”.
- Need a mechanism for the private sector to predict value to invest. Provide the private sector with an incentive / business model. One option, for situations in which RUF is not applicable, is to examine other possible banking approaches to put a value to the property.
- Don’t sweat the small service flows (80/20 rule), at least in the beginning - focus first on major service flows.

Workgroup 2 Responses to Questions:

Question 1: On what scale should prospective restoration planning occur (e.g., regional / watershed scale)? What are appropriate service area boundaries?

Identifying possible restoration opportunities on a watershed scale is the appropriate approach provided that a nexus (e.g., migratory species, flyways, etc.) exists between a potential injury and restoration service flow(s). However, in some instances and with the consent of the trustees, a regional scale may be considered in those areas with less desirable or limited restoration opportunities.

To assist with identifying appropriate restoration opportunities, it is recommended to (a) consult with the applicable trustees and NGOs in the area and (b) consider existing state and/or federal regional planning programs. Additionally, a Comprehensive Conservation and Management Plan (CCMP), if developed for the area of interest, should provide an inventory with prioritization of habitat and living resources which may lend itself to identifying restoration opportunities that to provide the desired ecological value.

Question 2: To what extent must the impact to which credits may be applied be known at the time of restoration, and factored into project selection?

It is recommended to consult with the applicable trustees in the area to determine if the potential impact to which credits may be applied needs to be identified before or at some point during the project selection process. Regardless, a nexus must exist between a potential injury and restoration service flow(s) when credits are utilized.

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There are a number of factors that are pressing the need for identifying restoration opportunities, particularly in many increasingly urbanized areas of the country. These factors include decreasing trustee and NGO resource time and funding, diminishing number of viable properties, escalating property prices, and increasing development pressures. In light of these factors, incentives are needed for the private sector to voluntarily provide known potential impacts to increase restoration activities. The concept of prospective restoration may have merit as an incentive.

There are also many benefits for the private and public sector to provide restoration in the short term. For the private sector, these benefits may include increased certainty of potential liability on a long-term basis, and valuation of credits with time due to increased function levels. For the public sector, benefits may include a longer period of time to enjoy the function levels and decreased administrative costs, effort, and time.

Question 3: What are existing mechanisms that land trust and other organizations have for ecosystem planning for acquisition and restoration projects? Are there existing inventories of potential restoration projects? How can these be applied to prospective restoration planning and accessed by interested parties?

There may be many entities, including trustees and NGOs, to contact to learn of potential restoration opportunities in an area. There is a recognized need to establish a central inventory of all the restoration needs; however, identifying and funding an entity to establish the inventory may be a challenge. If available in the area, a CCMP may provide a listing of local habitat and living resources.

Question 4: How should restoration projects be identified, prioritized and selected? What criteria should be used? What entities should be involved in project selection?

It is encouraged to engage the applicable trustees and NGOs in the area early in the process of identifying possible restoration opportunities, since a project may need to satisfy the specific needs of multiple entities, including the public. These entities may be able to assist with supplying an inventory of projects already identified in the area, along with the associated service flows.

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The trustees should assist in making the determination of which criteria are applicable. Regardless of the criteria used, they should be applied consistently and based on scientific merit. If applicable, federal trustees, such as the USFWS and NOAA, and many state trustees have existing NRDA guidance documents that may provide valuation criteria. Other considerations include potential ecological stressors; surrounding land use potential and infrastructure; and habitat connectivity or habitat juxtaposition in a landscape context.

It is noted that restoration can encompass the creation, restoration, preservation, or enhancement of a property, but restoration selection should result in the highest net gain. Consequently, there are many instances where preservation alone is the least preferred method.

Question 5: How should public acceptance of the project be factored into the selection decision?

It is critical to have public acceptance of the restoration project, and the trustees and NGOs engaged in the project should be able to assist. The project will likely need to comply with federal, state, and local regulations or processes such as the NEPA, permitting, NRDA, and the Coastal Zone Management plans.

Project related information presented to the public should be well examined from a consistency and scientific perspective. Public education, particularly for NRDA situations, may be needed. Consideration should be given to determining the stage at which and how to engage the public.

Question 6: How should interstate / federal consistency be addressed (e.g., federal consistency under Coastal Zone Management)?

The project will need to comply with federal, state, and local regulations or processes such as the NEPA, permitting, NRDA, and the Coastal Zone Management plans. A consistency determination may need to be developed; it is likely that one will be required for restoration, and another for liability resolution.

To ensure that all applicable regulations or processes will be addressed, it is advised to engage the trustees early. There may potentially be policy hurdles encountered to resolve impact in one area and implement restoration in another area.

Question 7: What are appropriate performance measures for restoration projects?

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Performance measures should be established and agreed upon early in the process. At a minimum, the performance measures should be:

- Efficient and cost effective;
- Applied at an appropriate scale;
- Align the service(s) that is going to be delivered and monitor to achieve this; and
- Include an adaptive management component that will identify contingencies.

Workgroup 2 Recommended Next Steps:

- Develop a list of working definitions for RUF and its associated terminology.
- Catalog and provide a listing of valuation approaches and assessment tools.
- NFWF will potentially fund RUF policy development at the NJDEP.
- Private sector should examine properties and assess ecological assets; also focus on less desirable properties and identify enhancements to increase the ecological value.

Workgroup 3: Economics of Restoration: Valuation of Ecological Service Flows, Calculation of Credits and Market Analysis

Facilitators: *Steven Thur, NOAA; Matt Zafonte, California Department of Fish and Game / OSPR*

Participants: Charlene Andrade (WA DFW), David Brunner (NFWF), Al Collins (Oxy), Bob Grave, Stephanie Gripne (The Nature Conservancy), Steve Hampton (CA OSPR), Sheila Hess (Ducks Unlimited), Mark Kieser (Environmental Trading Network), Pam Lange (NJ DEP), Rose Longoria (Yakama Nation), Stephen Morales (Chevron), Bruce Peacock (NPS), Ralph Stahl (DuPont), Chuck Stillwell (BP), Joshua Tallis (BB&L), Cynthia Wong (Chevron), Ellen Yeoman (PG&E)

Questions Addressed:

- 1) What methods should be used to calculate credits for prospective restoration projects (e.g., HEA vs. alternative methods)? Is it appropriate to apply NRDA tools?
- 2) How should the initial credits that are assigned be evaluated when the credits are applied (“withdrawn”) sometime in the future?
- 3) How should uncertainty with respect to changes in ecological services over time be addressed? What are methods to minimize the uncertainty related to the value of ecological credits upon “withdrawal”?
- 4) How does calculation of credits vary by habitat type or type of restoration undertaken?
- 5) If credits are obtained and utilized under different programs (e.g., NRDA, CWA Section 404), how would the credits be interchanged?
- 6) What is the interchangeability of credits calculated using different methods (e.g., economic-basis vs. ecological-basis)? Given the current NRDA focus of quantifying losses and gains in ecological service units, is there a benefit to monetizing the credits?
- 7) To what extent should the “landscape” value of a restoration project be taken into consideration? “Landscape” value is the added ecological value of connecting two sites, having habitat values on site that are of higher quality than other areas providing similar services (i.e. a sheltered forest versus a ridgetop, high edge forest).
- 8) How does an entity at the “bank” or “seller” level determine whether there is a market (“buyer”) for the credits?
- 9) Describe three to five case studies related to this Workgroup topic that vary by scale, habitat type, and geography.
- 10) *Facilitator Question:* How does the market for credits compare / compete with the cash-out options sometimes offered by Trustees (e.g., Louisiana Regional Restoration Plan Region 2, State of Texas)? Will this be reduced to a pure financial cost per unit of credit comparison on the part of those needing to resolve liability? Will the availability of cash-

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out options hinder (or perhaps preclude) the formation of a bank and its associated market? Should pilot bank projects be targeted toward or away from geographic areas that have well-defined cash-out options?

Summary:

The following are overarching consensus points that were agreed upon by members of Workgroup 3.

Workgroup 3 Consensus Points:

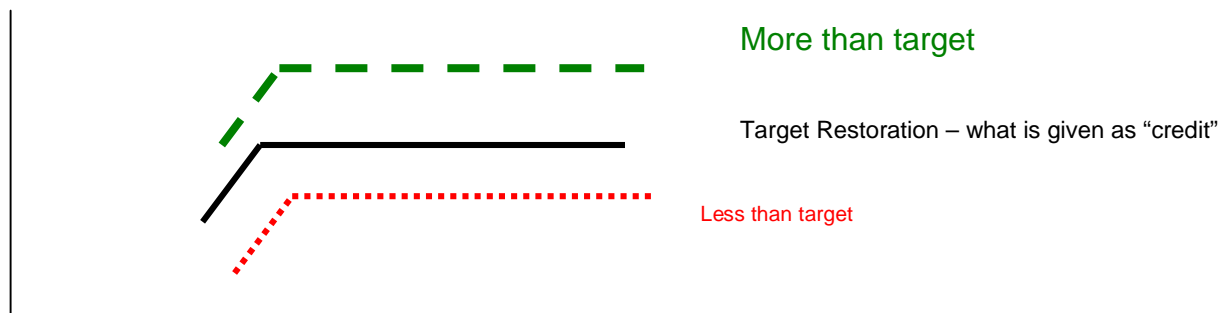
1. Keep it simple (in the calculation of credits, and focus on enhancement / creation, rather than preservation, projects).
2. One size does not fit all: method of calculating credits may vary by RUF action.
3. Different states may have different comfort levels with the RUF concept.
4. Property rights are necessary.
5. For a successful bank, the risk (consequences of uncertainty) must be shared by responsible parties (RPs), Trustees and Bankers (if involved).
6. A third-party banker may:
 - A. Provide industry the immediate financial benefit from the RUF action that they would like to realize,
 - B. Solve certain issues of uncertainty, and
 - C. Facilitate the development of a RUF market.
5. Third-party bankers will arise where profitable if property rights are defined and policy / regulation “allows” RPs to use them.
6. In theory, if NRDA RUF is established, the credits may be transferable to other regulatory programs. However, accounting is a significant barrier.
7. Interchangeability of credits between regulatory programs will encourage (may be necessary for) market development.
8. If a company or third-party banker is going to undertake RUF activities, they should collect as much information as possible at the start, so that the credits can later be interchanged between programs if permitted by the regulatory agencies.

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9. Companies need a financial incentive to do RUF, but do not necessarily have the incentive to push for maximum credit due to transaction costs. May produce positive externalities.
10. Areas that may support a market:
 - A. Many RPs and limited restoration options (e.g., urban river systems)
 - B. Repetitively injured areas (e.g., coastal Louisiana oil spills)
 - C. Interchangeability permitted
 - D. Attractive to resolve liability under multiple regulatory programs
 - E. Large ecological needs exist (e.g., where natural areas are rare)
12. Potential RUF “Evolution”
 - A. Single RP and its own bank
 - B. Cooperative: Few RPs, no third-party banker
 - C. Many RPs and single third-party banker
 - D. Many RPs and many third-party bankers

Workgroup 3 Hypothetical Scenario:

The Workgroup used a hypothetical site / scenario for discussion. Injury 1 = set amount that can be compensated by a project of 20 ac. Questions: Should the group undertake a 50 ac project with the hope to apply the 30 ac of “credit” to a future liability? How should the use of the credits take place? What happens when the owner of the credits wants to cash them in?



Who certifies whether the restoration is represented by the red dotted line or the green dashed line? This should be negotiated up front so that no one is surprised. It is important for

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there to be some reassurance that the credits that would apply will go no lower than the red dotted line, and no higher than the green dashed line.

This situation is no different than the bond market. The higher-rated bonds offer less interest, while the closer one comes to a “junk” bond, the higher the interest rate offered.

Workgroup 3 Responses to Questions:

Question 1: What methods should be used to calculate credits for prospective restoration projects (e.g., HEA vs. alternative methods)? Is it appropriate to apply NRDA tools?

- HEA is an obvious choice because NRDA practitioners are familiar with the method and it is less costly than valuation.
- Valuation methods can be used to calculate credits. They may be more rigorous and require fewer assumptions than HEA. However, they may also be more costly, time-consuming, and necessitate that all losses be valued in addition to the banked project.
- Mitigation ratios (either acre-for-acre or some non- 1:1 ratio) are possibilities. Use of ratios would reduce uncertainty for the banker and the parties needing to purchase credits, but ratios are very general and hence may not ensure that the interim losses are adequately compensated for (potential for over- or under-compensation).
- Need to consider time related to the restoration and service flows. Slowly-developing projects may need to be larger to generate the same number of credits per unit time than smaller projects that generate high service flows quickly. What happens to the credits and property once the debit is satisfied? Can the property be used for something else? Most of the time, the property is placed under a conservation easement so that the habitat, and the restoration, are preserved in perpetuity. Once the debit is satisfied, and if the property has not been placed into a conservation easement, there should not be any preclusion to using the property for some other purpose.
- All tools are anthropocentric. Some losses are very difficult to define. For example, what if a culturally-used resource is lost? How do these tools address those issues?
- Stay with things that are simple so that RUF gets off the ground – if we try to create a new method that will take time. Use the tools that we have and are familiar to those involved.

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- Do the assumptions necessary in HEA mandate a level of uncertainty that will be unacceptable to industry? Acres or a dollar value provide certainty for industry, but may not be favored by the trustees.

Question 2: How should the initial credits that are assigned be evaluated when the credits are applied (“withdrawn”) sometime in the future?

- All parties must be willing to accept some uncertainty.
- One potential solution is to have a third party be the banker. Companies with projects sell them to the banker. The banker discounts the value as compensation for bearing the risk that a project may be worth less than initially estimated when the credits are withdrawn from the bank. Then, when an RP has a liability, they purchase ground-truthed credits from the banker at the “real” ecosystem service level, not the prospective service level. This divorces the deposit and the withdrawal parts of the transaction.
- Will this require periodic (annual) evaluations of service provision? Perhaps, but a fully functioning third-party banking scheme is not likely to develop in the near-term. This would be excellent information for refining recovery / maturation functions for future NRDAs, even outside of the banking context.
- Who does the periodic evaluations? The bank would have potential conflicts of interest. Trustees would need external funding to conduct the assessments. A neutral third party may be a possibility; one that is selected by the trustees but funded by the bank being evaluated.

Question 3: How should uncertainty with respect to changes in ecological services over time be addressed? What are methods to minimize the uncertainty related to the value of ecological credits upon “withdrawal”?

- This question is somewhat related to question 7 addressed by Workgroup 2.
- The banker does assume some risk. The banker pays the restoration creator based on their best estimate of the environmental services to be provided in the future, and build in a risk discount. The Trustees would then verify actual restoration status, and the banker sells agreed-upon credits to the RP.

Question 4: How does calculation of credits vary by habitat type or type of restoration?

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- Creation, enhancement, acquisition, and preservation may present different challenges for calculation of credit and the development of pilot RUF projects.
- Keep it simple. Use enhancement / creation projects to start the RUF process. It can be difficult to quantify the environmental benefit of preservation-only projects in the NRDA context.
- Habitat types: either stay within one habitat type (e.g., responsible party with a marsh injury liability goes to a marsh bank), or use the typical NRDA habitat tradeoff process.

Question 5: If credits are obtained and utilized under different programs (e.g., NRDA, CWA Section 404), how would the credits be interchanged?

- This question is somewhat related to question 3 addressed by Workgroup 1.
- Credits can be interchangeable from a technical perspective, but may potentially be more valuable under certain regulatory regimes.
- Accounting problem: how do you track whether one project is “double-dipping” to satisfy liability under different regulatory regimes? The government agencies that grant resolutions of liability statements do not talk to one another.

Question 6: What is the interchangeability of credits calculated using different methods (e.g., economic-basis vs. ecological-basis)? Given the current NRDA focus of quantifying losses and gains in ecological service units, is there a benefit to monetizing the credits?

- If the banker or the other program does not have the information necessary to make the credits interchange, then it cannot be done. If the information is available, then from a technical perspective, credits should be interchangeable between regulatory programs. There may be policy-related reasons that restrict interchangeability. It is incumbent upon the banker, and in their financial interest, to maintain the records necessary to make the interchange.
- A working bank really means expediting restoration. Interchangeability is going to be key to getting banks started (increases the number of potential buyers and sellers, thus increasing the size of the potential market the banker can serve).

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- Suggestion: if one is going to undertake a prospective restoration project, then collect as much information as possible up front, so that one has the ability to interchange the credits among programs if that is later permitted by regulatory agencies.

Question 7: To what extent should the “landscape” value of a restoration project be taken into consideration? “Landscape” value is the added ecological value of connecting two sites, having habitat values on site that are of higher quality than other areas providing similar services (i.e. a sheltered forest versus a ridgetop, high edge forest).

- HEA is an evolving tool and has made strides to address this issue. Most agree that credit should be given if varying landscape values can be defined. However, the added value may be difficult to define and of little added credit value.
- If we keep it simple to start, this is a non-issue. If the injury and the RUF project are in close geographical proximity, and the resources are the same, then there is little bonus for differing landscape contexts. The exception is if there is some synergy provided by the bank benefiting nearby resources (e.g., connecting two refugia).
- In the near term, companies may not need to get the extra credit for an increased landscape context. If they are saving money upfront, companies may not necessarily need all the extra credit (i.e., don’t need every last dime).
- An NGO may be able to certify the landscape quality component, similar to forestry seals of approval.

Question 8: How does an entity at the “bank” or “seller” level determine whether there is a market (“buyer”) for the credits?

- This question is somewhat related to question 1 addressed by Workgroup 2.
- Need to develop a property rights structure to provide the incentive for an entrepreneurial third-party banker to take the risk to start a restoration bank. Establish when credits will start to accrue.
- Ideas on locations / situations that could support a market:
 - a) Locations with many RPs and limited restoration options.
 - b) Urban river systems.

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- c) Areas with repetitive new injuries and few RPs (e.g., Louisiana oil spills) that have restoration projects with high fixed costs and low variable costs.
- d) Geographical areas that have few or no barriers to interchangeability of credits between regulatory programs.
- e) Sites with intact tracts that are attractive to multiple regulatory programs.
- f) A watershed with significant ecological needs for restoration may be prime for a restoration bank, even to compensate for injuries in a neighboring watershed that has a comparable wealth of ecological services.
- With the availability of potential buyers and sellers, and an adequate regulatory / policy framework on the part of Trustees / regulators, if there is a market, then there will be players.
- This is not unlike a Superfund cleanup with multiple RPs. One takes the risk and does the cleanup, in the hopes that the other PRPs will come to a contractual agreement to compensate the firm with the initiative for their restoration expenses.

Question 9: Describe three to five case studies related to this Workgroup topic that vary by scale, habitat type, and geography.

- Query other programs to see how we can convert their banks to NRDA credits. Use their lessons learned about whether credit accrues prior to liability being identified.
- North Carolina and/or South Carolina Department of Transportation has a program to invest ahead of the liability, but deals with very small projects.
- Trustees looked at this for seagrass in Florida Keys, and recognized that it is necessary to realize economies of scale in small-scale restoration.
- Manage liabilities for ESA sites in multiple states. Multiple parties pay into an account that then funds a larger restoration project.
- Platte River fund paid by those that have a liability, then that entity undertakes a significant restoration project.

Question 10 (Facilitator Question): How does the market for credits compare / compete with the cash-out options sometimes offered by Trustees (e.g., Louisiana Regional Restoration Plan Region 2, State of Texas)? Will this be reduced to a pure financial cost per unit of credit comparison on the part of those needing to resolve liability? Will the

availability of cash-out options hinder (or perhaps preclude) the formation of a bank and its associated market? Should pilot bank projects be targeted toward or away from geographic areas that have well-defined cash-out options?

- Profitability will determine whether a bank will arise. Competition with the trustees' cash-out settlement option may scare off some potential bankers. However, competition may be good for the "market" if the cost / DSAY estimate of the Trustees is too high and a banker can undercut and still make a profit.
- Aside from those states with existing cash out programs, trustees will try to use actual projects (either past projects or proposed future projects) for determining cash settlements, based on ecological services. If banked projects are available that offset the injury, then it is likely that trustees will scale the costs to actual prices prior to cash out.
- Have a third-party NGO certify the quality of the bank. This would be applicable for RP-created and owned projects and the trusted NGO would monitor / certify to the satisfaction of the Trustees.

Workgroup 3 Recommended Next Steps:

- Pilot studies along the lines of a single RP developing its own RUF projects or a cooperative of multiple RPs developing a RUF project that is owned by the collective.
- Develop property rights.
- Develop a regulatory/policy scheme that gives property rights some meaning. This will allow a third-party entity to step up to become a profit-seeking banker.
- Expectation setting on the part of federal and state trustees to give credit under certain conditions.

Overall Points of Consensus

The following summarizes the main points of consensus reached by workshop participants as a result of deliberations of the three workgroups and plenary discussions over the 2-day workshop on Prospective Restoration / Restoration Up Front.

- The trustees are willing to discuss RUF for known / existing liabilities on a site-specific basis, recognizing that different states may have different comfort levels with the RUF concept. Agency policy / guidance could potentially be developed in parallel with on-the-ground projects to determine if the concept works for an area and to garner successes and lessons learned in the process.
- The risks associated with RUF are worth taking for trustees, companies and third-party bankers, who will arise where profitable. All parties must be willing to share the risk.
- All parties have a common goal to conserve and restore more land, sooner rather than later, and recognize that companies require a business incentive to do so. There is broad recognition of the limited restoration opportunities and increasing lag times for implementation. The costs of restoration / conservation in many areas of the country are increasing due to fewer viable properties, growing development pressures, and increasing property prices. Coupled with trustee resource time and funding constraints, this has provided a sense of urgency to get restoration on the ground early. Furthermore, there is a desire to take advantage of the opportunity to leverage the private sector's willingness to provide restoration projects.
- Keep it simple. Follow the 80/20 rule, especially in the initial efforts. For instance, focus first on major service flows and do not be overly concerned with smaller service flows.
- Constraints for implementation should be established for the RUF process initially and expanded in incremental steps.
- A "one-size-fits-all" approach is not likely to work for RUF. However, there is a need for a common language and stable, common currency (e.g., ecological service flows) among parties involved in RUF activities.
- Use existing tools from NRDA and other environmental trading programs. There is a need to identify existing NRDA tools and catalog valuation approaches (e.g., HEA and REA). From conservation banking, wetlands mitigation banking, and water quality

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trading, the tools for agreements, on-line databases, and long-term management are most likely to be transferable to RUF implementation.

- Formal agreements are needed to reduce uncertainty. Existing legal mechanisms can be used to establish RUF agreements between companies, trustees, and responsible parties selling or buying credits.
- Benefits of RUF include: a) a proactive approach to increase conservation / restoration, especially in urban areas; b) efficiencies, including restoration project selection, decreased transaction costs, administrative convenience, and streamlined settlement; c) ecological services begin sooner; d) restoration in a deliberate planned fashion; e) financial incentives and greater predictability for companies; f) increased certainty of project success.
- The biggest challenge for responsible parties and trustees is the risk. Other challenges, some of which are not unique to RUF, include: a) trustee time and resource constraints; b) regional or geographical limitations (nexus to injury); c) public acceptance; d) legal ramifications; e) restoration performance liability and identifying a willing third party to accept a property for long-term management; f) compliance with federal, state, and local regulations such as NEPA, permitting, NRDA, and Coastal Zone Management plans.
- Regional restoration plans and/or strategies are needed.
- There must be a nexus between the prospective restoration service flow(s) and the injured resources for trustee acceptance. The nexus could be at the functional / watershed scale (e.g., migratory species, flyways, etc.). RUF credits are transferable between entities so long as a nexus to the injury exists. In some instances and with the consent of the trustees, a regional scale may be considered in those areas with less desirable or limited restoration opportunities.
- There is a need to unify the various restoration lists developed by multiple entities for the same watershed / region and to develop maps or areas of ecological service flows.
- Monitoring and third party verification of restoration success are important. Define goals and objectives and ensure that there will be adequate monitoring / maintenance funds up front. Adaptive Management should be integrated into performance measures, which should be determined on a case-by-case basis.

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- Stakeholder and public involvement are key, and engagement should occur up front at an appropriate time. The public notice process for other trading / banking programs may not be adequate for NRDA.
- The NGO community should be engaged early in the restoration process.
- Property rights are necessary.
- A mechanism is needed for the private sector to predict the value to invest. A net gain is needed for the concept to succeed.
- Third-party bankers will arise where profitable if property rights are defined and policy allows. A third-party banker may: a) provide industry with immediate financial benefit from a RUF action; b) solve certain issues of uncertainty; and c) facilitate the development of a RUF market. There could be different variations of a RUF market with different combinations of single / multiple RPs and single / multiple third-party bankers.
- In theory, if RUF is established for NRDA, the credits may be transferable to other regulatory programs. However, accounting is a significant barrier. The interchangeability of credits between regulatory programs will encourage (may be necessary for) market development. If a company or third-party banker is going to do RUF, they should collect as much information at the start so that the credits can be interchanged between programs, if permitted by the regulatory agencies.
- There are areas with certain characteristics that may be more likely to support a prospective restoration market. Examples include: a) areas with many RPs and limited restoration options, such as urban river systems; b) repetitively injured areas, such as coastal Louisiana; c) geographic areas where interchangeability of credits between regulatory programs is permitted; d) sites where it is attractive to resolve liability under multiple regulatory programs; and e) areas where large ecological needs exist and natural areas are rare.

Next Steps

The workshop participants identified the following action items which could be undertaken to further the concept and implementation of Prospective Restoration / Restoration Up Front. Many of the action items can be undertaken by all workshop participants, working at the level of their own organizations and using on-the-ground projects to test the concept.

- Develop, review and distribute workshop proceedings.
- Continue to pursue “pilot” projects to implement, test, and refine RUF concepts.
- Share information from the workshop with participants’ agencies / organizations.
- Identify agencies / organizations willing to post the workshop proceedings and follow-up information on their websites.
- Send links to existing web sites and references from other environmental trading programs to Steering Committee. Compile a list of references and post to host web sites.
- Develop a glossary of RUF terms to provide a “common vocabulary” to practitioners, many of whom have disparate backgrounds.
- Develop a summary matrix of similarities and differences across existing environmental trading programs.
- Catalogue existing ecological evaluation techniques, including field methods and resource economics.
- Compile list of GIS/mapping sources that may be used to identify potential restoration projects.
- Establish a follow-up working group consisting of representatives from government, industry, Native American tribes, and non-governmental organizations to continue work on the next steps outlined in these proceedings.
- Consider organizing a RUF workshop in one year or more that will focus on tools and lessons learned from any additional “pilot” projects that have been implemented at that time. The workshop could include a hands-on approach where participants walk through a hypothetical restoration bank and different prospective restoration scenarios.

Appendix

Workshop Agenda

Pre-Meeting, Tuesday, September 5:

4:00 – 5:30 pm Steering Committee & Workgroup Chair Meeting
Location: Chevron Park – Bishop Ranch 1, Room 1220

Day 1, Wednesday, September 6:

7:00 – 8:00 am Continental Breakfast (provided by Chevron) and Registration
Location: Chevron Park – Bishop Ranch 1, Room 1220

8:00 – 8:15 am Workshop Introduction and Welcome (Mike Amman, Chevron; Ralph Stahl, DuPont)

8:15 – 8:30 am Overview of Technical Workgroups, Expectations

8:30 – 10:30 am Plenary Session 1: Invited Presentations (15-20 minutes per topic)

- a. Issues and challenges from a Federal Trustee perspective (Ron Gouguet, NOAA; Sherry Krest, USFWS)*
- b. Issues and challenges from a State Trustee perspective (Richard Seiler / Don Pitts, Texas; Pam Lange, New Jersey)*
- c. Issues and challenges from a business perspective (Lucinda Jackson, Chevron; Al Collins, Occidental)*
- d. Win-Win Solutions for Natural Resources and Businesses (Lynn Dwyer, National Fish & Wildlife Foundation; Joseph Hankins, The Conservation Fund)*
- e. Lessons Learned from Other Environmental Trading Models (Jessica Fox, EPRI Solutions; Jenny Guiling, World Resources Institute; Stephanie Gripne, The Nature Conservancy)*

10:30 – 10:45 am Break

10:45 – 12:00 pm Technical Workgroups Session Meeting 1

12:00 – 1:00 pm Lunch (provided by Chevron)

12:30 – 12:45 pm Invited Presentation:

*Prospective restoration from the perspective of a real estate manager
(Brian Kelly, Chevron)*

1:00 – 4:00 pm Technical Workgroups Session Meeting 2

4:00 – 5:00 pm Plenary Session 2: Technical Workgroup Progress Reports

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5:00 pm Close

6:30 – 8:30 pm Reception / Cash Bar
Location: Marriott San Ramon, 2600 Bishop Drive – Salon B&C
Dinner on your own

Day 2, Thursday, September 7:

7:00 – 8:00 am Continental Breakfast (provided by Chevron)
Location: Chevron Park – Bishop Ranch 1, Room 1220

8:00 – 12:00pm Technical Workgroups Session Meeting 3 (Final Session)

12:00 – 1:00 pm Lunch (provided by Chevron)

1:00 – 2:00 pm Plenary Session 3: Technical Workgroup Final Status Reports

2:00 – 3:00 pm Plenary Session 4: Open Discussion on Workgroup Findings (moderated)

3:00 – 4:00 pm Plenary Session 5: Workshop Summary and Closing

4:00 pm Adjourn

4:00 – 5:00 pm Steering Committee & Workgroup Chair Meeting

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Prospective Restoration / Restoration Up Front Workshop

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- British Petroleum (BP)
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- E.I. duPont de Nemours and Company (DuPont)
- Exxon Mobil
- Honeywell
- Occidental International Corporation
- Pacific Gas and Electric Company
- Rio Tinto / Kennecott Utah Copper Corporation
- Rohm and Haas Company
- Tierra Solutions

In addition to the above, a number of organizations provided travel and lodging funds for their representatives in lieu of direct financial contributions. We specifically acknowledge the contribution from NOAA that allowed representatives to travel to and participate in these discussions.

* Financial contributors as of January 31, 2007.